

IN THE CLAIMS:

- 1 1. (Original) A method of regulating methanol concentration in a direct methanol
2 fuel cell system comprising:
3 providing a concentration regulator, coupled to a source of methanol or a source
4 of water or both, and responsive to a control signal for increasing or decreasing the con-
5 centration of methanol supplied to a fuel cell;
6 periodically short-circuiting a load driven by said fuel cell;
7 sensing the short circuit current produced by said fuel cell;
8 comparing said sensed current to a reference; and
9 generating said control signal in response to said comparison.

- 1 2. (Original) The method as in claim 1 wherein one or more of said sensing, com-
2 paring and generating steps is performed by a microprocessor or microcontroller.

- 1 3. (Withdrawn) A direct methanol fuel cell system comprising;
2 a direct methanol fuel cell;
3 a source of air or oxygen coupled to the fuel cell;
4 a source of methanol;
5 a source of water;
6 a detector for detecting changes in a short circuit current produced by said fuel
7 cell and responsively producing a control signal; and
8 a concentration regulator coupled to the methanol source or to the water source or
9 to both sources and said detector, said concentration regulator being responsive to said
10 control signal for varying the concentration of methanol in said fuel cell.

- 1 4. (Withdrawn) A direct methanol fuel cell system comprising;
2 a direct methanol fuel cell;
3 a source of air or oxygen coupled to the fuel cell;

4 a source of methanol;
5 a source of water;
6 a detector for detecting changes in a short circuit current produced by said fuel
7 cell and responsively producing a control signal; and
8 a concentration regulator coupled to the methanol source or to the water source or
9 to both sources, detector and anode of said fuel cell, responsive to said control signal for
10 varying the concentration of methanol in said fuel cell, and wherein said concentration
11 regulator comprises a metering valve, a pump, or a combination thereof.

1 5. (Currently Amended) A method of regulating methanol concentration in a direct
2 methanol fuel cell system comprising:

3 providing a concentration regulator, coupled to a source of methanol or a source
4 of water or both, and responsive to a control signal for increasing or decreasing the con-
5 centration of methanol supplied to a fuel cell;

6 sensing one of a group of fuel cell operating characteristics including potential
7 across a load driven by said fuel cell, potential across a portion of a fuel cell stack, po-
8 tential at a portion of an anode of said fuel cell which is proximate to an end of a metha-
9 nol flow path, an open circuit potential of said fuel cell, a short circuit current of said fuel
10 cell and, periodically [, alternately] sensing at least one other of said [group of] fuel cell
11 operating characteristics; [and]

12 using at least two of said sensed operating characteristics to generate a control
13 signal; and

14 generating said control signal directing said concentration regulator to control a
15 concentration of methanol in said fuel cell.